Make It@Home: Scytale

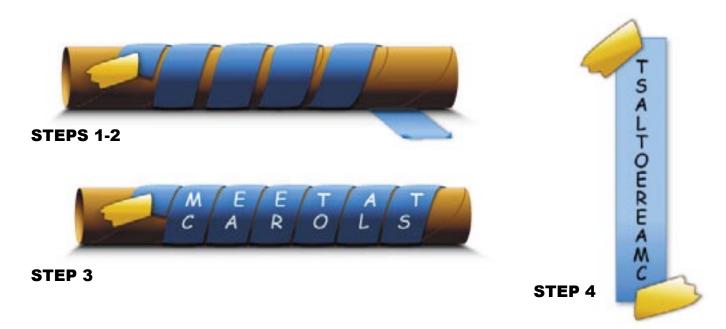
A. Materials

- 2 Cardboard tube found inside of paper towel/toilet paper rolls (Juice cans or a broom handle also work well for this activity.)
- 1 Long strip of paper, about 2 cm wide (Adding machine paper or the margins from an old newspaper work well for this activity.)
 Pen/Marker
 Tape

B. How To Make A Scytale

NOTE: It is important that both you and your friend have the same size scytale (cardboad tubes) to encipher and decipher each other's messages with. Therefore, you will need to give the second cardboard tube to your friend once you have completed this activity.

- 1. Tape one strip of paper to the end of the cardboard tube.
- 2. Wrap the remaining length of the paper around the tube in a spiral fashion. Make sure that the edges meet without overlapping. Secure the second end of paper to the tube with another piece of tape.
- 3. After the paper is secure, write the message across the strip of paper just as if you were writing on a normal piece of paper from left to right. Make sure you write one letter per pass of paper. When you reach the end of a line, rotate the scytale slightly away from you and begin the next line of your message.
- 4. Once the message has been written, unwrap it and you will simply see a bunch of scrambled letters on the paper. Your message has been encrypted!



C. How To Decrypt Your Message

NOTE: To be able to decrypt a message made from a scytale, you have to have the same size scytale as the person sending the message.!!

1. Wrap the strip of paper around a scytale of the same size until the letters align and reveal the secret message.

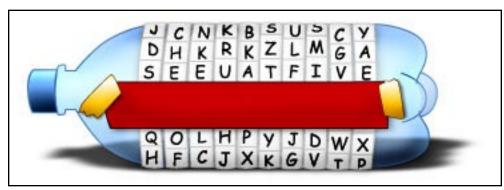
C. How To Encrypt A Message

- 1. Beginning with the first strip on the left, rotate the strips until your 10-letter message is visible in the row above the construction paper.
- 2. Copy the row of scrambled letters located just beneath the construction paper. This will be the ciphertext you send to a friend.

Example:

PLAINTEXT: SEEUATFIVE CIPHERTEXT: QOLHPYJDWX

3. If you want to write a message that is longer then 10 letters, repeat STEPS 1 and 2 until you have encrypted the entire message.



Step 1

D. How To Decrypt A Message

NOTE: Make sure that the person receiving your message has an identical cipher wheel or else they won't be able to decipher the message! This means that they have to have the same number of strips with identical scrambled alphabets written on each strip. Also, each strip must be placed around the bottle in the same order as yours!

- 1. Arrange, in order, each letter of the encrypted message below the construction paper.
- 2. Looking at the line above the construction paper, read the deciphered message.